CONCEPTUAL COMPONENTS FOR A DEER CREEK WATER EXCHANGE PROGRAM

November, 2003

A proposal to implement a Water Exchange Program for the lower Deer Creek area is being developed and input is being requested. The following document outlines the background of the proposed program and presents a conceptual draft of components that could be included in the program proposal. The purpose of this document is to encourage discussion, participation and feedback as to program development. The final proposal will encourage the participation by both Deer Creek Irrigation District and Stanford Vina Ranch Irrigation Company, incorporate the needs of local water users, follow the appropriate permitting requirements, and be integrated with existing federal, state and local programs.

Background:

In 1923 the courts adjudicated entire flow of Deer Creek with 35% of the flow entitlement going to Deer Creek Irrigation District and 65% to Stanford Vina Ranch Irrigation Company.

In 1989, the Resources Agency published a report entitled: *Upper Sacramento River Fisheries and Riparian Habitat Management Plan*. Findings from the plan concluded that Deer Creek is one of only a few waterways in the Central Valley that continues to support a native population of wild spring-run Chinook salmon and the most serious impact to the Deer Creek fishery is the reduction of transportation flows. The 1989 plan identified the number one solution to increasing transportation flows was to negotiate an agreement with water right holders to pump groundwater into the irrigation systems at critical times in exchange for leaving an equal amount of natural flow in the stream for fish migration.

In 1993, California Department of Fish and Game published a report entitled: *Restoring Central Valley Streams: A Plan for Action*. Findings from this study concluded that Deer Creek has the greatest potential of all Sacramento Valley streams for increasing naturally spawning population of steelhead and spring-run salmon.

Although both the 1989 and 1993 studies agreed that the exact amount of flow necessary to provide unimpaired migration for adult salmon and steelhead is unknown, an estimated flow requirement of approximately 50 cfs, as measured below the Stanford Vina Ranch Irrigation Company main diversion, was identified.

In 1998, Deer Creek Watershed Conservancy implemented the *Deer Creek Watershed Management Plan*. As part of the plan, the DCWC adopted several recommendations from the 1989 and 1993 studies, and incorporated as their number one strategy to maintain stream flows necessary for unimpaired fish passage for Chinook salmon and steelhead.

Since 1994, DCID and SVRIC have worked with state, county and local groups to identify their agricultural water needs and study various scenarios to increase fish transportation flows in Deer Creek. In 1998 a parshall flume was constructed along DCID's diversion to help

identify DCID's seasonal diversion requirements. In 1998 and 1999, several dedicated groundwater monitoring wells were constructed and a comprehensive groundwater monitoring program was developed in the lower Deer Creek watershed. In 2002 a test production well was constructed in the lower aquifer and in 2003, DCID along with DWR and Tehama County, participated in a Deer Creek Water Exchange Pilot Program. The Pilot Program tested the effectiveness of increasing the fish transportation flows in Deer Creek by seasonally substituting bypassed surface water for groundwater, while minimizing third-party impacts associated with pumping.

Conceptual Components of a Proposed Water Exchange Program:

DCID recognizes the need for a long-term solution to the fisheries issue in Deer Creek and is providing draft proposal of conceptual components that they feel are necessary for the successful implementation of a water exchange program, and the successful implementation of the goals set forth by the Deer Creek Watershed Management Plan, along with state and federal fisheries restoration plans.

As mentioned, the estimated flow for unimpaired fish migration has been identified at 50 cfs. With a 35% entitlement to Deer Creek flow, DCID's proposed contribution is estimated at 17 cfs. DCID has undertaken a preliminarily evaluation of the key components, necessary to achieve their bypass goal of 17 cfs, without significant adverse affects to agriculture and environmental water needs, and local groundwater users. A draft list of these components is as follows:

- **Efficiency Improvements to the DCID Distribution System:** Efficiency improvements to the distribution system may include piping, canal lining, weirs and SCADA system. A secondary element of this component may be on farm conservation and efficiency improvements such as soil moisture monitoring, land leveling, recirculation, etc. Prior to establishing an estimated cost for this component, a detailed evaluation of the DCID distribution systems will be necessary.

- **Supplemental Water Supply Development:** Supplemental water supply may be developed through groundwater substitution pumping. Completion of the Deer Creek Water Exchange Pilot Program in 2003 has shown that the lower portion of the underlying aquifer may be pumped without impacts to upper aquifer users. Continuation of this pilot program will evaluate impacts of groundwater extraction from the lower aquifer under different climatic and hydrologic conditions, particularly in a drought scenario. The use of existing agricultural wells to provide supplemental water may be a less expensive alternative than the construction of additional wells in the DCID service areas. However, the availability of existing agricultural wells that extract groundwater primarily from the lower aquifer and prevent impact to upper aquifer users will need to be explored. A secondary element of this component could look at opportunities for aquifer recharge.

- **Surface and Groundwater Monitoring:** Prior to augmenting supply through groundwater substitution pumping, groundwater management objectives would be

defined and a monitoring plan suitable for fulfilling the objectives would be adopted. Surface water flow monitoring will be necessary both instream and within the District's distribution system to quantify program benefits. Water quality monitoring would be conducted as necessary to identify potential water quality-related impacts associated with groundwater pumping.

- **Fish Migration Monitoring**. CDF&G and USFWS would develop a monitoring program to measure improvements in fisheries habitat and migration of fish, specifically spring-run salmon and steelhead.

- **Long-term Lease of Bypassed Water:** An agreement would be worked out to develop a long-term lease of the Deer Creek water bypassed by DCID. It is envisioned that this lease would allow DCID to utilize the Deer Creek water during periods of fish non-migration. It is also envisioned that during periods of critical need, the agreement would allow DCID to bypass water in excess of the long-term lease amount, so as to provide an increased pulse of transportation flow. It may be necessary for the long-term lease to be implemented in a phased approached so as to provide DCID the necessary time for construction of surface water distribution improvements and supplemental water supply development.

Invitation to Provide Input:

You are cordially invited to discuss the components and direction of this water exchange program in greater detail. See the details below.

DEER CREEK WATER EXCHANGE PROGRAM – PUBLIC DISCUSSION

DATE: November 4, 2003

LOCATION: Vina Community Club (next to the Post Office)

TIME: 6-8 pm
